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In abstracts of patents only the names of firms have been given and the abstracts have been indexed under these names. Where two firms have jointly taken out a patent, or where a paper has two or more authors, all the names have been included in the index.

Names beginning with de, la, le, van, von, etc., are indexed under the surname.

Abbreviations of Names of Firms, etc.

AAP .. .. .. Koppers Co. Inc.
AATCC .. .. American Association of Textile Chemists and Colorists
Acna .. .. .. Aziende Colori Nazionali Affini
ACY .. .. .. American Cyanamid Co.
BA .. .. .. Bates Chemical Co. Inc.
BASF .. .. Badische Anilin- & Soda-Fabrik A.G.
CFM .. .. Cassella Farbwerke Mainkur A.G.
CIBA .. .. .. CIBA Ltd
Col .. .. .. Columbian Carbon Co.
CSIRO .. .. Commonwealth Scientific and Industrial Research Organisation
DH .. .. .. Durand & Huguenin S.A.
DuP .. .. .. E.I. du Pont de Nemours & Co. Inc.
FBy .. .. .. Farbenfabriken Bayer A.G.
FC .. .. .. Ferro Corpn
FH .. .. .. Farbwerke Hoechst A.G.
Fran .. .. .. Française des Matières Colorantes S.A.
FW .. .. .. VEB Farbenfabrik Wolfen
GAF .. .. .. GAF Corpn
GS .. .. .. G. Siegle & Co. G.m.b.H.
Gy .. .. .. Geigy, J. R., A.G.
The Geigy Co. Ltd
HH .. .. .. Hardman & Holden Ltd
HSH .. .. .. Harshaw Chemical Co.
HWL .. .. .. Hickson & Welch Ltd
IC .. .. .. Interchemical Corpn
ICI .. .. .. Imperial Chemical Industries Ltd
KVK .. .. .. Kemisk Varek Koge A/S
KYK .. .. .. Nippon Kayaku Co.
LT .. .. .. Laporte Titanium Ltd
MCI .. .. .. Mitsubishi Chemical Industries Ltd
MDW .. .. Mitsui Chemical Industry Co. Ltd
MMM .. .. Minnesota Mining & Manufacturing Corpn
Montecatini .. .. Montecatini Società Generale per l'Industria Mineraria e Chimica
NL .. .. .. National Lead Co.
NSK .. .. .. Sumitomo Chemical Co. Ltd
OBM .. .. .. Otto B May Inc.
Rhône Poulenc .. Société des Usines Chimiques Rhône-Poulenc
S .. .. .. Sandoz A.G.
Sandoz Products Ltd
Vond .. .. .. N.V. Fabriek van Chemische Producten Vondelingenplaat
YDC .. .. .. Yorkshire Dyeware & Chemical Co. Ltd

Symbols used in Index

The following symbols have been added, where appropriate, after the names of authors.

C .. .. .. Communication
CMC .. .. .. Publication sponsored by the Colour Measurement Committee
Corr .. .. .. Correspondence
EP .. .. .. Explanatory Paper
IDC .. .. .. Publication sponsored by the Identification of Dyes Committee
N .. .. .. Note
O .. .. .. Obituary Notice
P .. .. .. Proceedings
PC .. .. .. Pattern Card
R .. .. .. Book Review
RP .. .. .. Review Paper

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979	488
3,463,639	490
645	494
665	550
730	489
771	492
3,464,781	550
793	493
847	550
852	550
854	493
886	492
922	489
971	491
3,465,550	494
551	494
552	488
554	488
3,466,136	550
248	490
322	490
3,467,481	496
482	492
484	495
488	550
612	490
658	492
3,468,623	540
632	538
679	545
689	545
694	548
697	551
698	551
767	548
805	540
835	545
843	551
844	551
869	540
883	545
924	540
3,469,985	545
3,477,956	474

List of Periodicals Abstracted

With Abbreviated Titles used

JANUARY—DECEMBER 1970

Abbreviated Title	Journal	Address of Publisher
Amer. Dyestuff Rep.	American Dyestuff Reporter	44 E. 23rd Street, New York, 10010, N.Y., U.S.A.
Anal. Chem.	Analytical Chemistry	American Chemical Society, 20th and Northampton Streets, Easton, Pa., U.S.A.
Angew. Chem. / *Annalen*	Angewandte Chemie / Liebig's Annalen der Chemie	Verlag Chemie G.m.b.H., 6940, Weinheim, Pappelallee 3, Germany.
Australian J. Biol. Sci.	Australian Journal of Biological Sciences	Commonwealth Scientific and Industrial Research Organisation, 314 Albert Street, Victoria, Australia.
Biochem. J.	Biochemical Journal	Cambridge University Press, Bentley House, 200, Euston Road, London, N.W.1.
Bull. Chem. Soc. Japan	Bulletin of the Chemical Society of Japan	5, 1–Chome, Kanda-Surugadai, Chiyoda-ku, Tokyo, Japan.
Bull. Inst. Text. France	Bulletin de l'Institut Textile de France	35 rue des Abondances, 92, Boulogne-sur-Seine, France.
Bull. Text. Res. Inst. Japan	Bulletin of the Textile Research Institute	4, Sawatari, Kanagawa-ku, Yokohama, Japan.
Bumazh. prom.	Bumazhnaya Promyshlennost'	State Committee for Forest, Cellulose, Paper and Wood Processing Industries, Moscow K–12, ul. 25 Oktyabrya 8, U.S.S.R.
Canadian Textile J.	Canadian Textile Journal	Canadian Textile Journal Publishing Co. Ltd, 4920 de Maisonneuve Blvd, West, Suite 405, Montreal 215, Quebec, Canada.
Chem. Abs.	Chemical Abstracts	American Chemical Society, 1155 16th Street, N.W., Washington D.C. 20036, U.S.A.
Chem. Communs.	Chemical Communications	The Chemical Society, Burlington House, London, W1V OBN.
Chem. Ber.	Chemische Berichte	Verlag Chemie G.m.b.H., 6940 Weinheim, Pappelalee 3, Germany.
Chem. and Ind.	Chemistry and Industry	The Society of Chemical Industry, 14 Belgrave Square, London, S.W.1
Chem. in Britain	Chemistry in Britain	The Chemical Society, Burlington House, London W1V 0BN. / The Royal Institute of Chemistry, 30 Russell Square, London WC1B 5DT.
Chemiefasern	Chemiefasern	Deutscher Fachverlag G.m.b.H., Frankfurt/Main, Schumannstrasse 27, Germany.
Collect. Czech. Chem. Communs	Collection of Czechoslovak Chemical Communications	Czechoslovak Academy of Sciences, Institute of Organic Chemistry and Biochemistry, Na cvičišti 2, Prague 6, Czechoslovakia.
Color Engng	Color Engineering	Chromatic Communications, Inc., 799, Roosevelt Road, Building 4, Suite 300, Glen Ellyn, Illinois 60137, U.S.A.
Deutsche Farben-Zeitschrift	Deutsche Farben-Zeitschrift	Wissenschaftliche Verlag G.m.b.H., Stuttgart, Birkenwaldstrasse 44, Germany.
Die Farbe	Die Farbe	Musterschmidt-Verlag, 34, Göttingen, Turmstrasse 7, Postfach 421, Germany
Doklady Akad. Nauk S.S.S.R.	Doklady Akademii Nauk S.S.S.R.	Academy of Sciences of the U.S.S.R., Moscow, K–62, Podsosenkii pereulik 21, U.S.S.R.
Dyer	The International Dyer, Textile Printer, Bleacher and Finisher	Textile Business Press Ltd., 30 Finsbury Square, London E.C.2.
Endeavour	Endeavour	Imperial Chemical Industries Ltd, Millbank, London S.W.1.
Faserforsch. und Textiltech.	Faserforschung und Textiltechnik	Akademie-Verlag G.m.b.H. 108 Berlin, Leipziger Strasse 3–4, Germany.
Galaxia	Galaxia	Asociatión Argentina de Quimicos y Coloristas Textiles, Bulnes 1425, Buenos Aires, Argentina.
Helv. chim. Acta	Helvetica chimica Acta	Verlag Helvetica Chimica Acta, 4007 Basle, Switzerland.
Hungarian Tech. Abstracts	Hungarian Technical Abstracts	Hungarian Technical Abstracts, P.O. Box 12, Budapest 8, Hungary.
Ind. Eng. Chem.	Industrial and Engineering Chemistry	American Chemical Society, 1155 16th Street, N.W., Washington D.C., 20036, U.S.A.
Indian Textile J.	Indian Textile Journal	The Indian Textile Journal Pte Ltd, Surya Mahal, Military Square Lane, Bombay–1, India.
Izvestiya Akad. Nauk S.S.S.R.	Izvestiya Akademii Nauk S.S.S.R.	Academy of Sciences of the U.S.S.R., Moscow, Leninskii prospekt 47, U.S.S.R.
J. Amer. Chem. Soc.	Journal of the American Chemical Society	1155, 16th Street, N.W., Washington DC., 20036, U.S.A.
J. Amer. Leather Chem. Assocn	Journal of the American Leather Chemists' Association	228 North Green Street, Easton, Pennsylvania, U.S.A.
J. Appl. Chem.	Journal of Applied Chemistry	Society of Chemical Industry, 14 Belgrave Square, London S.W.1.
J. Appl. Polymer Sci.	Journal of Applied Polymer Science	Interscience Publishers Ltd, 88-90 Chancery Lane, London W.C.2.
J. Biol. Chem.	Journal of Biological Chemistry	Mount Royal and Guilford Avenues, Baltimore 2, Maryland, U.S.A.
J.C.S., C Organic	Journal of the Chemical Society (C Organic)	Burlington House, London W1V OBN.
J. Chem. Phys.	Journal of Chemical Physics	American Institute of Physics, Lancaster, Pennsylvania 17604, U.S.A.
J. Chromatography	Journal of Chromatography	Elsevier Publishing Co., 110-112 Spuistraat, Amsterdam, Holland.
J. Indian Chem. Soc.	Journal of the Indian Chemical Society	92 Acharya Prafulla Chandra Road, Calcutta 9, India.
J. Oil Col. Chem. Assocn	Journal of the Oil and Colour Chemists' Association	Wax Chandlers' Hall, Gresham Street, London E.C.2.
J. Opt. Soc. Amer.	Journal of the Optical Society of America	American Institute of Physics, Prince and Lemon Streets, Lancaster, Pennsylvania 17604, U.S.A.
J. Org. Chem.	Journal of Organic Chemistry	American Chemical Society, 20th and Northampton Streets, Easton, Pa., U.S.A.
J. Paint Tech.	Journal of Paint Technology	121 South Broad Street, Philadelphia, Pa. 19107, U.S.A.
J. Phys. Chem.	Journal of Physical Chemistry	American Chemical Society, 20th and Northampton Streets, Easton, Pa., U.S.A.
J. Polymer Sci.	Journal of Polymer Science	Interscience Publishers Inc., 250 Fifth Avenue, New York 1, N.Y., U.S.A.
J. Res. Nat. Bur. Stand.	Journal of Research of the National Bureau of Standards	Superintendent of Documents, U.S. Government Printing Office, Washington DC., 20402, U.S.A.
J. Soc. Fiber Sci. Technol. Japan	Journal of the Society of Fiber Science and Technology, Japan	Sen-i Gakkai, c/o Tokyo Institute of Technology, Ookayama, Meguro-ku, Tokyo, Japan.
J. Soc. Leather Trades Chem.	Journal of the Society of Leather Trades' Chemists	52 Crouch Hall Lane, Redbourne, Herts.
J. Textile Inst.	Journal of the Textile Institute	10 Blackfriars Street, Manchester 3.

List of Periodicals Abstracted — *continued*

Abbreviated Title	Journal	Address of Publisher
Khim. Volok.	Khimicheskie Volokna	State Committee of Chemical and Oil Industry, Moscow, Krivokolennyi pereulok d.12, U.S.S.R.
Kolloid. zhur.	Kolloidnĭy zhurnal (Colloid Journal of the U.S.S.R.)	Academy of Sciences of the U.S.S.R., Moscow, Shubinskii pereulok 10, U.S.S.R.
Kolor. Ertesito	Koloriasztikai Értesitó	Alkalmazott-kémiai és Koloriasztikai Kutato Laboratórium, Budapest 62, Postafiók 182, Hungary
Makromol. Chem.	Die Makromolekulare Chemie	Dr. Alfred Hüthig, Verlag GmbH, Wilckenstr 3, Heidelberg, Germany.
Melliand Textilber.	Melliand Textilberichte	Melliand Textilberichte KG, D- 6900 Heidelberg 1, Rohrbacher Str. 76, Germany.
Mh. Chem.	Monatshefte für Chemie	Springer-Verlag, Aloll Wein, Mölkerbastei 5, Austria.
Mund. Text. Arg.	Mundo Textil Argentino	Esmeralda 853 8° P. of 111, Buenos Aires, Argentina.
Nature	Nature	Macmillan & Co. Ltd, St. Martin's Street, London W.C.2.
Paint Manuf.	Paint Manufacture	28 Essex Street, Strand, London W.C.2.
Paint, Oil & Col. J.	Paint, Oil and Colour Journal	Morris Ashby Ltd, 10 Philpot Lane, London E.C.3.
Paint Tech.	Paint Technology	Sawell Publications Ltd, 4 Ludgate Circus, London E.C.4.
Pakistan J. Sci. Ind. Res.	Pakistan Journal of Scientific and Industrial Research	39 Garden Road, Karachi 3, Pakistan.
Plastics & Polymers	Transactions and Journal, The Plastics Institute	11 Hobart Place, London S.W.1.
Polymer Engng Sci.	Polymer Engineering and Science	Society of Plastics Engineers Inc., 656 W. Putnam Avenue, Greenwich, Conn. 06830, U.S.A.
Polish Tech. Abs.	Polish Technical Abstracts	Warsaw, Aleje Niepodleglosci 188, Poland.
Printing Tech.	Printing Technology	Institute of Printing, 10/11 Bedford Row, London W.C.1.
Proc. Chem. Soc.	Proceedings of the Chemical Society	Burlington House, London W1V OBN.
Proc. Roy. Soc.	Proceedings of the Royal Society	Burlington House, London W1V OBN.
Rec. Trav. Chim.	Recueil des Travaux chimiques des Pays-Bas	Burnierstraat 1, 's-Gravenhage, Holland.
Rept Govt Chem. Ind. Res. Inst., Tokyo	Reports of the Government Chemical Industrial Research Institute, Tokyo	1-5 Honmachi 1-Chome, Shibuyaku, Tokyo 151, Japan.
Rev. Roumaine Chim.	Revue Roumaine de Chimie	23 Str. Dumbrava Rosie, Bucharest 9, Roumania.
Stain Tech.	Stain Technology	Williams & Wilkins Co., Baltimore 2, Maryland, U.S.A.
Svensk Papperstidning	Svensk Papperstidning	Villagatan 1, 114 32 Stockholm, Sweden.
Talanta	Talanta	Pergamon Press, Headington Hill Hall, Oxford.
Tappi	Tappi	Technical Association of Pulp and Paper Industry, 360 Lexington Avenue, New York, N.Y. 10017, U.S.A.
Teintex	Teintex	60 rue de Richelieu, Paris (2e), France.
Teinture et Apprêts	Teinture et Apprêts	Société d'Editions Techniques de la Manutention Textile, 12 Rue d'Anjou, Paris (8e), France.
Tekhnol. tekstil. Prom.	Izvestiya vŭsshikh uchebnŭkh zavedeniĭ, Tekhnologiya tekstil'noy promŭshlennosti (Technology of the Textile Industry of the U.S.S.R.)	Ivanova, ulitsa Fridrikha Engel'sa 21, U.S.S.R.
Tekstil. prom.	Tekstil'naya promŭshlennost' (Textile Industry of the U.S.S.R.)	Gizleprom, Moscow, Tsentr, ulitsa Kirova 39, 6-I etazh Komnata 620, U.S.S.R.
Tetrahedron *Tetrahedron Letters*	Tetrahedron Tetrahedron Letters	Pergamon Press, Headington Hill Hall, Oxford.
Tex	De Tex	Postbus 4, Doetinchem, Holland.
Textil Praxis	Textil Praxis	Konradin-Verlag Robert Kohlammer GmbH, 7000 Stuttgart, Postfach 625, Germany.
Text. Chem. Colorist	Textile Chemist and Colorist	American Association of Textile Chemists and Colorists, P.O. Box 12215, Research Triangle Park, North Carolina, 27709, U.S.A.
Textile Digest	Textile Digest	V. D. Limaye, Indian Printing Works, 9 Bakehouse Lane, Fort, Bombay, India.
Text. Inst. & Ind.	Textile Institute and Industry	10 Blackfriars Street, Manchester 3.
Text. Manuf.	Textile Manufacturer	31 King Street West, Manchester M3 2PL.
Text. Month	Textile Month	Textile Business Press Ltd, Statham House, Talbot Road, Stretford, Manchester M32 0EP.
Text. Prog.	Textile Progress	The Textile Institute, 10 Blackfriars Street, Manchester 3.
Text. Research J.	Textile Research Journal	Publications Dept., P.O. Box 625, Princeton, New Jersey 08540, U.S.A.
Textilveredlung	Textilveredlung	Der Verlag, Postfach 207, CH-4001 Basle, Switzerland.
Textile J. of Australia	Textile Journal of Australia	142 Clarence Street, Sydney, N.S.W., Australia.
Tinctoria	Tinctoria	Via Negroli 51, Milan, Italy.
Trans. Faraday Soc.	Transactions of the Faraday Society	Aberdeen University Press Ltd, 6 Upper Kirkgate, Aberdeen, Scotland.
Trans. I.R.I.	Transactions and Proceedings Institution of the Rubber Industry	4 Kensington Palace Gardens, London W.8.
Trans. Inst. Metal Fin.	Transactions of the Institute of Metal Finishing	178 Goswell Road, London E.C.1.
Ukrain. khim. Zhur.	Ukrainskiĭ khimicheskiĭ zhurnal (Ukrainian Chemical Journal)	Kiev, 30 ulitsa Leontovicha 9a, U.S.S.R.
Vysokomol. Soed.	Vysokomolekularnye Soedineniya	Academy of Sciences of the U.S.S.R., Moscow, Kuznetskii Most, d. 9/10, U.S.S.R.
Wool & Woollens of India	Wool and Woollens of India	Colour Publications Pte Ltd, Vindhya Press, 126A, Dhuruwadi, off Dr Nariman Road, Bombay-28, India.
Wool Sci. Rev.	Wool Science Review	International Wool Secretariat, Wool House, Carlton Gardens, London S.W.1.
World Text. Abs.	World Textile Abstracts	The Shirley Institute, Manchester M20 8RX.
Zesz. Nauk. Politech. Lodz	Zeszyty Naukowe Politechniki Lódzkiej	Lódz, Gdanska 155, Poland.
Zhur. obshch. Khim.	Zhurnal obshchei Khimii (Journal of General Chemistry of the U.S.S.R.)	Academy of Sciences of the U.S.S.R., Leningrad B-164, Mendeleevskaya liniya, U.S.S.R.
Zhur. priklad. khim.	Zhurnal prikladnoi Khimii (Journal of Applied Chemistry of the U.S.S.R.)	Academy of Sciences of the U.S.S.R., Leningrad B-164, Mendeleevskaya liniya, U.S.S.R.

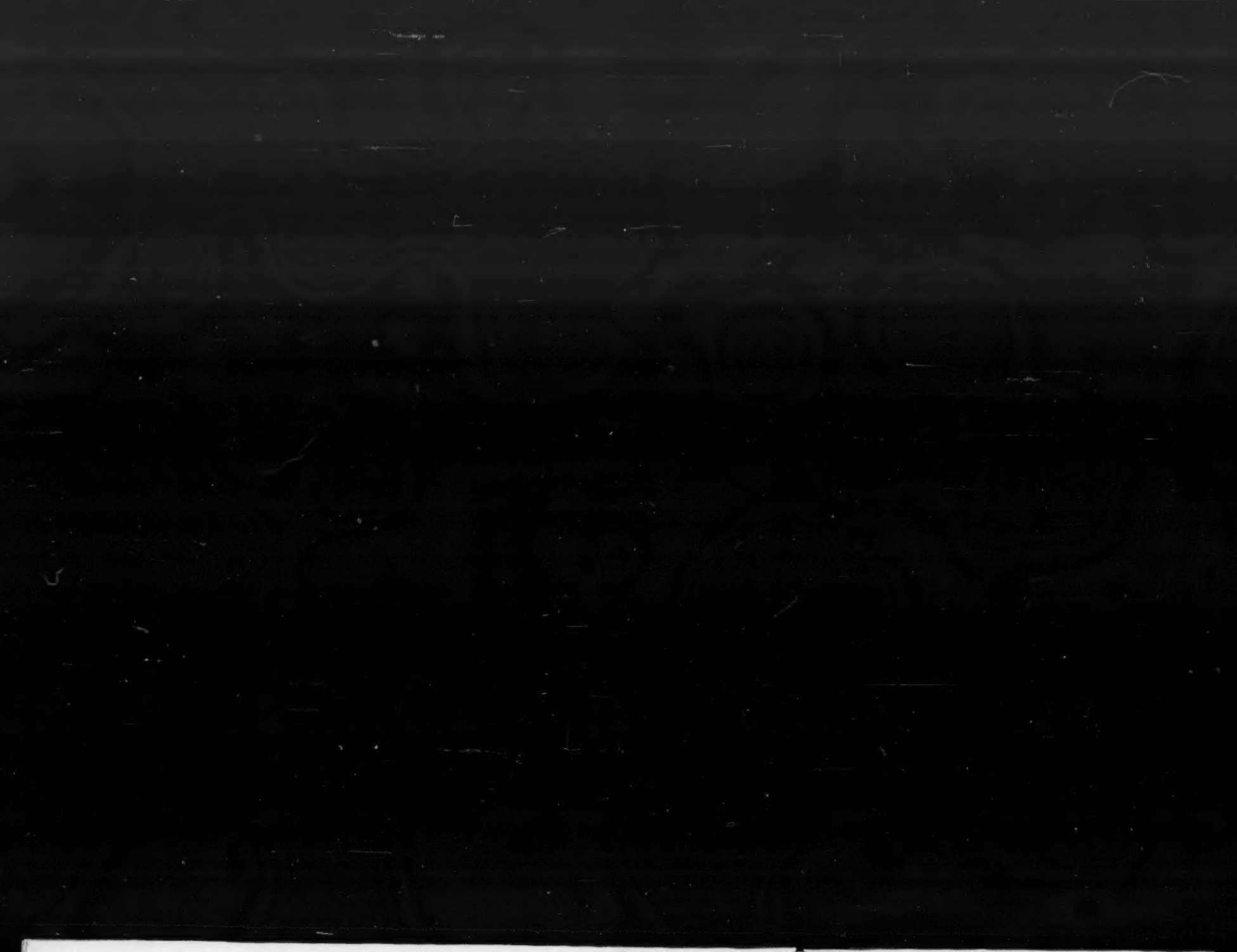
ABBREVIATIONS AND SYMBOLS

used in *The Journal of the Society of Dyers and Colourists*

No distinction is made in abbreviations between singular and plural

In special cases abbreviations and symbols other than those in the list may be used, but as far as possible they will be given as either in standard English dictionaries or in *British Standard* 1991: Part 1:1967

absolute	abs.
acetyl	Ac
alkyl radical (in chemical formula)	Alk
alternating current	a.c.
ampère	A
Angström unit	Å
anhydrous	anhyd.
approximate, -ly	approx., ca
aqueous	aq.
aryl radical (in chemical formula)	Ar
asymmetric (applied to organic compounds)	*as-*
atmosphere (pressure unit)	atm.
atomic	at.
atomic weight	at. wt
Baumé	Bé
benzoyl	Bz
boiling point	b.p.
British Patent	*BP*
British thermal unit	B.t.u.
butyl (normal)	Bu^n
butyl (iso)	Bu^i
butyl (tertiary)	Bu^t
calculated	calc.
calorie	cal
Celsius (centigrade)	C
centi	c
compound	cpd
concentrated	conc.
concentration	concn
configuration (carbohydrates and amino acids)	D-, L-
constant	const.
containing more than *n* carbon atoms	containing $> n$ C
corrected	corr.
crystal, -line, -lised (adjective)	cryst.
cubic centimetre (etc.)	cm^3 (etc.)
curie	Ci
cycle	c
decomposition	decomp.
degree	deg
degree of polymerisation	DP
degree of substitution	DS
density	ρ
derivative	deriv.
dextrorotatory	*dextro.* (+)-
dilute	dil.
direct current	d.c.
distil, -led	dist.
electromotive force	e.m.f.
equation	eqn
equimolecular	equimol.
equivalent	equiv.
ethyl	Et
Fahrenheit	F
foot	ft
freezing point	f.p.
gallon (Imperial)	gal
gallon (U.S.A.)	gal (U.S.A.)
gram	g
gram-molecule	mole
greater than	$>$
halogen (in chemical formula)	Hal
horse power	h.p.
hour	h
hydrogen ion concentration (negative logarithm)	pH
inch	in
infrared	i.r.
inorganic	inorg.
insoluble	insol.
kilocalorie	kcal
kilogram	kg
laevorotatory	*laevo*, (–)-
less than	$<$
litre	l
logarithm (decadic)	log
logarithm (natural)	ln
lumen	lm
maximum	max.
melting point	m.p.
meta-	*m-*
methyl	Me
metre	m
microgram	µg
micron (micrometre)	µm
milli-	m
millilitre	ml
minimum	min.
minute	min
molar (concentration)	M
molecular, molecule	mol.
molecular weight	mol. wt
nanometre	nm
normal (concentration)	N
normal (organic compound)	n-
not greater than	$\not>$
not less than	$\not<$
organic	org.
ortho-	*o-*
ounce	oz
para-	*p-*
parts per million	p.p.m.
Patent	*P*
phenyl	Ph
poise	P
potential difference	p.d.
pound	lb
precipitate	ppt.
precipitated	pptd
precipitation	pptn
proportional to	$\propto$
propyl (normal)	Pr^n
propyl (iso)	Pr^i
qualitative(ly)	qual.
quantitative(ly)	quant.
racemic (organic chemistry)	*r-*
recrystallised	recryst.
refractive index	*n*
relative humidity	r.h.
revolutions per minute	rev/min
röntgen	r
saturate(d)	sat.*
second	s
secondary (organic compound)	s-
soluble	sol.
solution	soln
specific	sp.
specific gravity	sp. gr.
square in (etc)	in^2 (etc.)
stokes	S
substituted	subst.*
substitution on nitrogen, oxygen, etc.	*N-*, *O-*, etc.
symmetrical (organic compound)	*s-*
temperature	temp.
tertiary (organic compound)	t-
turns per inch	turns/in
Twaddell	Tw
United States Patent	*USP*
ultraviolet	u.v.
unsaturated	unsat.*
unsubstituted	unsubst.*
viscosity	η
volt	V
volume	vol.
watt	W
wavelength	λ
weight	wt
yard	yd

* Only in describing general formulae in the Abstracts Section

Printed by The White Rose Press, Mexborough and London.